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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte
DAVID W. CANNELL, NATAYLA FADEEVA, and
NGHI VAN NGUYEN

Appeal 2007-0541
Application 09/820,954
Technology Center 1600

Decided: March 13, 2008

Before DONALD E. ADAMS, LORA M. GREEN, and
RICHARD M. LEOVITZ, *Administrative Patent Judges*.

LEOVITZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 78 and 79. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

STATEMENT OF CASE

Appellants appeal the final rejection of claims 78 and 79 as anticipated under 35 U.S.C. § 102(b) by Riordan (U.S. Pat. No. 5,866,142,

Feb. 2, 1999) (Ans. 3). The claims are directed to compositions for protecting or repairing keratinous fibers, such as hair. Claims 78 and 79 read as follows:

78. A composition for protecting at least one keratinous fiber from extrinsic damage or repairing at least one keratinous fiber following extrinsic damage comprising:

at least one glucosamine, and

at least one additional sugar, said at least one additional sugar being different from glucosamine and comprising at least one C₅ to C₇ saccharide unit substituted with at least one amino group, wherein said at least one additional sugar is chosen from monosaccharides and oligosaccharides,

wherein said at least one glucosamine is present in an amount effective to protect said at least one keratinous fiber from said extrinsic damage or to repair said at least one damaged keratinous fiber.

79. A composition for protecting at least one keratinous fiber from extrinsic damage or repairing at least one keratinous fiber following extrinsic damage comprising:

at least one compound comprising at least one C₅ to C₇ saccharide unit substituted with at least one amino group, wherein said at least one compound is chosen from polysaccharides, and

at least one additional sugar, said at least one additional sugar being different from said at least one compound comprising at least one C₅ to C₇ saccharide unit substituted with at least one amino group and derivatives thereof, wherein said at least one additional sugar is unsubstituted,

wherein said at least one compound is present in an amount effective to protect said at least one keratinous fiber from said extrinsic damage or to repair said at least one damaged keratinous fiber.

FINDINGS OF FACT

1. The Specification describes compositions for repairing or protecting hair that comprise at least one C₅ to C₇ saccharide unit substituted with at least one amino group (Spec. 1: 1-7; 4: 17-19; 5: 3-8; 16: 3-14).
2. The “amino group may be chosen from substituted and unsubstituted groups. For example, the at least one amino group may be chosen from N-acetyl amino groups” (*id.* at 17: 17-19) which is a substituted amino.
3. “The at least one C₅ to C₇ saccharide unit may be further substituted with at least one group different from the at least one amino group” (*id.* at 17: 2-3).
4. Glucosamine is listed as an example of a C₆ monosaccharide substituted with one amino group (*id.* at 18: 20-22) and is utilized as a hydrochloride salt in the working examples (*id.* at 25-27).
5. Glucosamine has the formula C₆H₁₃NO₅ (The Merck Index, 10th Edition, at 638).
6. Claim 78 is directed to a composition that comprises: 1) at least one glucosamine; and 2) at least one additional sugar which comprises “at least one C₅ to C₇ saccharide unit substituted with at least one amino group” but which is different from glucosamine.
7. Claim 79 is directed to a composition that comprises: 1) “at least one C₅ to C₇ saccharide unit substituted with at least one amino group” which is a polysaccharide; and 2) at least one additional unsubstituted sugar which is different from compound 1).

The Riordan patent

8. Riordan describes a topical composition comprising N-acetyl-D-glucosamine (Riordan, at col. 7, l. 29) and hyaluronic acid (*id.* at col. 7, ll. 43-44) (Ans. 3).
9. N-acetyl-D-glucosamine has the formula $C_8H_{15}NO_6$ (The Merck Index, 10th Edition, at 638) which is glucosamine substituted at its amino position with an acetyl group.
10. Hyaluronic acid is a polysaccharide comprised of repeating units of a C_6 sugar covalently bonded to a C_6 sugar substituted with an amino group which is $NH(CO)CH_3$ (The Merck Index, 11th Edition, at 751-52).

ANALYSIS

Claim 78

Claim 78 is directed to a composition that comprises: 1) at least one glucosamine; and 2) at least one additional sugar which comprises “at least one C_5 to C_7 saccharide unit substituted with at least one amino group” but which is different from glucosamine (FF 6).

The Examiner finds that Riordan discloses a composition comprising N-acetyl-D-glucosamine and hyaluronic acid (FF 8, 9), which meets the limitations of claim 78 of 1) “at least one glucosamine” and 2) “at least one C_5 to C_7 saccharide unit substituted with at least one amino group” (FF 6), respectively, as recited in claim 78.

Appellants contend that N-acetyl-D-glucosamine is a derivative of glucosamine and not encompassed by the term “glucosamine” as recited in claim 78 (App. Br. 13).

The PTO gives the words in a claim their “broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.” *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). In this case, the issue is whether the Examiner erred in interpreting “glucosamine” to mean a genus of compounds that includes glucosamine and its derivative, N-acetyl glucosamine.

Glucosamine is represented by a single chemical formula, $C_6H_{13}NO_5$ (FF 5). Thus, we infer that, in its ordinary usage, persons of skill in the art would understand “glucosamine” to mean the compound having the specific formula $C_6H_{13}NO_5$.

The Specification does not define “glucosamine,” but it describes it as an example of a C_6 monosaccharide substituted with one amino group (FF 4). In the working examples, glucosamine is utilized in the form of the hydrochloride salt (*id.*). In neither case, is there any indication that “glucosamine” means anything other than a compound with the specific chemical formula $C_6H_{13}NO_5$ that is an *example* of a C_6 amino substituted monosaccharide.

N-acetyl glucosamine is a glucosamine derivative in which glucosamine’s amino group is chemically substituted with an acetyl group which has the formula $C_8H_{15}NO_6$ (FF 9). Its formula is therefore *different* from the chemical formula of glucosamine. Thus, in our opinion, “glucosamine” is not reasonably interpreted to include N-acetyl glucosamine because it has a different chemical formula.

The Specification, as noted by the Examiner (Ans. 5), describes the amino group of a substituted C₆ saccharide to include the N-acetyl amino group (FF 2; Spec. 17: 17-19) – the same amino group which is present in N-acetyl glucosamine. However, simply because the “amino group” of the C₅ to C₇ saccharide is defined in the Specification to represent a genus (e.g., NH₂ (an unsubstituted amino group) and N-acetyl amino) does not imply that glucosamine – which is one specific example of an amino group substituted saccharide – is also a genus of compounds as concluded by the Examiner (Ans. 5). We do not understand the Examiner’s logic in reaching this conclusion.

In sum, we conclude that the term “glucosamine” in claim 78 does not encompass N-acetyl glucosamine as described in the Riordan patent. Accordingly, we reverse the rejection of claim 78 as anticipated by Riordan.

Claim 79

Claim 79 is directed to a composition that comprises: 1) “at least one C₅ to C₇ saccharide unit substituted with at least one amino group” which is a polysaccharide; and 2) at least one additional unsubstituted sugar which is different from compound 1) (FF 7).

The Examiner finds that Riordan describes a topical composition comprising N-acetyl-D-glucosamine (Riordan, at col. 7, l. 29) and hyaluronic acid (*id.* at col. 7, ll. 43-44) (Ans. 3) (FF 8) – where the N-acetyl-D-glucosamine is compound 1) and hyaluronic acid is compound 2).

The Examiner finds that hyaluronic acid, as described in Riordan, is an unsubstituted sugar as in compound 2) claim 79

because it is an oligosaccharide and as a whole it is an unsubstituted sugar (see Merck Index 11th ed. pages 751-752). Further, as shown in Merck, Hyaluronic acid [sic] moieties contain no substitution except at its amino group.

(Ans. 6.)

The Examiner has not provided adequate evidence that Riordan anticipates claim 79. First, while N-acetyl glucosamine is a “C₅ to C₇ saccharide unit substituted with at least one amino group”, it is monosaccharide and not a “polysaccharide” (see Reply Br. 4) – and thus does not meet 1) of claim 79 which specifies that the compound is a polysaccharide. Second, hyaluronic acid is a *substituted* sugar because it is comprised of monosaccharides substituted with NH(CO)CH₃ (FF 10); claim 79 requires that compound 2) is an “unsubstituted sugar.”

The Examiner interprets “unsubstituted” to refer to the sugar as a whole, and concludes that hyaluronic acid, while comprising substituted monosaccharide units, does comprise any other substitutions (Ans. 6). We do not agree. The Specification consistently defines the invention as amino group *substitution* of a saccharide unit and explains that this chemical structure is responsible for its beneficial effects on hair (FF 1; Spec. 1: 1-7; 4: 17-19; 5: 3-8; 16: 3-14). Thus, when a sugar is referred to as “unsubstituted”, persons of ordinary skill in the art would understand that the sugar constituents – such as the monosaccharide units from which it is built – are also unsubstituted. As this is not the case for hyaluronic acid, we find that hyaluronic acid is not an unsubstituted sugar as required by 2) of claim 79.

For the forgoing reasons, we reverse the rejection of claim 79 as anticipated by Riordan.

CONCLUSION

The rejection of claims 78 and 79 as anticipated by Riordan is

REVERSED.

Ssc:

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